UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/710,442	11/10/2000	Todd Krautkremer	004683.P003	5257

30505 7590 06/02/2005

MARK J. SPOLYAR
38 FOUNTAIN ST.
SAN FRANCISCO, CA 94114

EXAMINER	
MATTIS, JASON E	

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 06/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/710,442	KRAUTKREMER ET AL.	
	Examiner	Art Unit	
	Jason E. Mattis	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 January 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-88* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-88* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to Applicants' amendment received on 1/7/05. Previous claim objections are withdrawn due to the amendment. Claims 1-88 are currently pending in the application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5, 8-11, 15-17, 21-26, and 85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pruthi et al. (U.S. Application 09/863593) in view of Burdick et al. (U.S. Pat. 6041352).

With respect to claim 1, Pruthi et al. discloses a method of monitoring performance of a network application at a demarcation point in a network **(See page 2 paragraphs 31-33 and item 102 in Figure 1 of Pruthi et al. for reference to a network monitor 102 monitoring data communications on the application layer at a point between two networks, N1 and N2, and providing real time metrics or statistics)**. Pruthi et al. also discloses generating, at the demarcation point data

indicative of a first network latency condition between a first TCP host on a first side and the demarcation point and a second network latency condition between a second TCP host on a second side and the demarcation point **(See page 2 paragraphs 31-33, page 3 paragraphs 38-41 and Figures 1 and of Pruthi et al. for reference to network monitor 102 collecting and analyzing network traffic indicative of both Network N1, which is a first network connected to monitor 102 on a first side of the demarcation point, and Network N2, which is a second network connected to monitor 102 on a second side of the demarcation point and for reference to generating TCP flow statistics, including one-way delay, or latency, statistics, at the monitor)**. Although Pruthi et al. also discloses determining a location, with respect to the demarcation point, of a performance problem associated with the network application **(See page 6 paragraph 67 of Pruthi et al. for reference to using the network monitor 102 to determine where, with respect to the monitor, "troubled" servers are located in a network)**, Pruthi et al. does not specifically disclose that the location is determined based on the analysis of network latency conditions.

With respect to claim 1, Burdick et al., in the field of communications, discloses determining the location of a performance problem based on the analysis of network latency conditions **(See column 6 liens 10-26 of Burdick et al. for reference to a system manager 105 using latency data to determine response times and isolate the location of performance problems within a transmission path)**. Determining the location of a performance problem based on the analysis of network latency conditions has the advantage of allowing the location of a device or network element

causing a transmission delay to be discovered so that an appropriate action may be taken to fix the performance problem at the determined location of the problem.

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Burdick et al., to combine determining the location of a performance problem based on the analysis of network latency conditions, as suggested by Burdick et al., with the system and method of Pruthi et al., with the motivation being to allow the location of a device or network element causing a transmission delay to be discovered so that an appropriate action may be taken to fix the performance problem at the determined location of the problem.

With respect to claims 2 and 3, Pruthi et al. discloses mediating, by using data collected at the demarcation point to correct an identified problem in the network, between infrastructure of the network managed by the source provider and customer-managed infrastructure of the network, networks N1 and N2 which are disclose to be either LANs, WANs, or the Internet **(See page 1 paragraph 3 and page 5 paragraph 53 of Pruthi et al. for reference to the networks used in the monitoring system of Pruthi et al. being either LANs, WANs, or the Internet and for reference to using statistics generated by the network monitor to mediate between the networks by dynamically routing of communications and providing bandwidth management responsive to statistics corresponding to network performance).**

With respect to claim 4, Pruthi et al. discloses measuring end-to-end performance of the network with respect to the network **(See page 2 paragraph 33 of Pruthi et al. for reference to monitoring the application layer for statistics that**

include roundtrip delays, meaning the end-to-end network performance is monitored).

With respect to claim 5, Pruthi et al. discloses measuring quantitative performance of the network application **(See page 2 paragraph 33 of Pruthi et al. for reference to measuring quantitative performance through statistics such as byte counts, bit counts, one-way or roundtrip delays, response times, retransmitted bytes, originating bytes per host, terminating bytes per host, originating-terminating host pair counts, web abort rates, throughput, goodput, and percent retransmitted bytes).**

With respect to claim 8, Pruthi et al. discloses measuring network availability **(See page 6 paragraph 66 of Pruthi et al. for reference to identifying "troubled servers" which are servers that are negatively impacting network availability).**

With respect to claim 9, Pruthi et al. discloses the performance problem being monitored comprising discarding packets **(See page 2 paragraph 33 of Pruthi et al. for reference to measuring percent retransmitted bytes, where bytes are retransmitted due to bytes being lost or discarded).**

With respect to claim 10, Pruthi et al. discloses the performance problem that is being monitored comprising retransmission that slows overall response time **(See page 2 paragraph 33 of Pruthi et al. for reference to measuring percent retransmitted bytes, which inherently slow overall response time because the bytes have to be sent more than once).**

With respect to claim 11, Pruthi et al. discloses that the first and second network latency conditions are expressed as congestion value indexes with the method comparing congestion index values over time **(See page 2 paragraphs 31-33, and page 5 paragraph 53 of Pruthi et al. for reference to measuring one-way delays as a real-time statistics and using the one-way delay statistics over time for dynamic routing)**.

With respect to claims 15 and 21, Pruthi et al. discloses the measurement engine, processor and query engine 316, measuring congestion index values, one-way delay statistics, which are a type of measurement value **(See page 2 paragraph 33 of Pruthi et al. for reference to measuring statistics of a network including one-way delay statistics)**. Pruthi et al. also discloses the management control, user interface 324, detecting variances in the congestion index, one-way delay statistic, over time and identifying the problem based on variances in the congestion index, one-way delay statistics **(See page 5 paragraphs 53-54 of Pruthi et al. for reference to identifying asymmetries in a network based on the one-way delay statistic, meaning the asymmetries are based on differences in the one-way delay statistics on either side of the network monitor)**.

With respect to claims 16 and 22, Pruthi et al. discloses the measurement engine, processor and query engine 316, measuring congestion index values, one-way delay statistics, which are a type of measurement value **(See page 2 paragraph 33 of Pruthi et al. for reference to measuring statistics of a network including one-way delay statistics)**. Pruthi et al. also discloses the management control, user interface

324, detecting variances in the congestion index, one-way delay statistic, over time between different types of traffic and identifying the problem based on variances in the congestion index, one-way delay statistics **(See page 3 paragraph 37 of Pruthi et al. for reference to determining the types of packets and filtering packets based on their types before processing the packets to gain performance statistics and See page 5 paragraphs 53-54 of Pruthi et al. for reference to identifying asymmetries in a network based on the one-way delay statistic, meaning the asymmetries are based on differences in the one-way delay statistics on either side of the network monitor for different types of traffic)**.

With respect to claim 17, for reference to management control, user interface 324, comparing measurement values, statistics over time **(See page 4 paragraph 50 of Pruthi et al. for reference to comparing statistics over time by recursively collecting and analyzing data be generating statistics based on previously generated statistics)**.

With respect to claim 23, Pruthi et al. discloses the measurement engine, processor and query engine 316, characterizing performance of the network application using one or more metrics **(See page 2 paragraph 33 of Pruthi et al. for reference to using generating statistics to monitor application layer traffic)**.

With respect to claim 24, Pruthi et al. discloses the metrics comprising a delay metric, roundtrip delay statistic, characterizing delay associated with end-to-end traffic in the network **(See page 2 paragraph 33 of Pruthi et al. for reference to statistics including a roundtrip delay statistic)**.

With respect to claims 25, Pruthi et al. discloses the metrics comprising a server delay metric, response time statistic, characterizing delay of a server in responding to a request associated with the network application **(See page 2 paragraph 33 of Pruthi et al. for reference to the response time statistic).**

With respect to claim 26, Pruthi et al. discloses the metrics, statistics, comprising packet counts and data rates **(See page 9 paragraph 103 of Pruthi et al. for reference to statistics including byte/packet counts and bit/packet rates).**

With respect to claim 85, Pruthi et al. discloses that the first and second network latency conditions characterize network transmission delay **(See page 2 paragraph 33 of Pruthi et al. for reference to statistics including one-way or roundtrip delays).**

4. Claims 6-7, 12-14, 18-20, 28-30, 33-41, 43-65, 67-77, 79, 83-84, and 86-88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pruthi et al. in view of Burdick et al., as applied to claims 1-5, 8-11, 15-17, 21-26, and 85 above, and in further view of Nelson et al. (U.S. Pat. 6421323).

With respect to claim 33, Pruthi et al. discloses a network device, network monitor 102, generating data, metrics or statistics, related to the operation of a network application at a demarcation point in a network on behalf of a provider **(See page 2 paragraphs 31-33 and item 102 in Figure 1 of Pruthi et al. for reference to a network monitor 102 monitoring data communications on the application layer at a point between two networks, N1 and N2, and providing real time metrics or**

statistics). Pruthi et al. also discloses that the data is indicative of a first delay between a first TCP host on a first side and the demarcation point and a second delay between a second TCP host on a second side and the demarcation point **(See page 2 paragraphs 31-33, page 3 paragraphs 38-41 and Figures 1 and of Pruthi et al. for reference to network monitor 102 collecting and analyzing network traffic indicative of both Network N1, which is a first network connected to monitor 102 on a first side of the demarcation point, and Network N2, which is a second network connected to monitor 102 on a second side of the demarcation point and for reference to generating TCP flow statistics, including one-way delay, or latency, statistics, at the monitor)**. Burdick et al. discloses determining the location of a performance problem based on the analysis of network latency conditions **(See column 6 liens 10-26 of Burdick et al. for reference to a system manager 105 using latency data to determine response times and isolate the location of performance problems within a transmission path)**. The combination of Pruthi et al. and Burdick et al. does not disclose using the data, metrics or statistics, collected to determine whether a problem associated with the operation of a network application is a responsibility of the provider.

With respect to claim 39, Pruthi et al. discloses a network device, network monitor 102, for use at a demarcation point in a network **(See page 2 paragraphs 31-33 and item 102 in Figure 1 of Pruthi et al. for reference to a network monitor 102 monitoring data communications on the application layer at a point between two networks, N1 and N2, and providing real time metrics or statistics)**. Pruthi et al.

also discloses a measurement engine, processor and query engine 316, to take measurements **(See page 3 paragraph 34 and item 316 in Figure 3 of Pruthi et al. for reference to processor and query engine 316 processing data packets to take measurements of statistics)**. Pruthi et al. further discloses generating a measurement value, statistic, in response to information regarding delays **(See page 2 paragraph 33 of Pruthi et al. for reference to statistics including one-way or roundtrip delays)**. Pruthi et al. also discloses that the delays correspond to a first delay between a first TCP host on a first side and the demarcation point and a second delay between a second TCP host on a second side and the demarcation point **(See page 2 paragraphs 31-33, page 3 paragraphs 38-41 and Figures 1 and of Pruthi et al. for reference to network monitor 102 collecting and analyzing network traffic indicative of both Network N1, which is a first network connected to monitor 102 on a first side of the demarcation point, and Network N2, which is a second network connected to monitor 102 on a second side of the demarcation point and for reference to generating TCP flow statistics, including one-way delay, or latency, statistics, at the monitor)**. Pruthi et al. also discloses a memory 318 coupled to the management engine **(See page 3 paragraph 34 and item 318 in Figure 1 of Pruthi et al. for reference to memory 318 coupled to processor and query engine 316)**. Pruthi et al. further discloses a storing the information indicative of delays, including the measurement value in the memory 318 **(See page 3 paragraph 36 of Pruthi et al. for reference to storing statistics, which include one-way or roundtrip delay statistics, in memory 318)**. Pruthi et al. also discloses management control, user

interface 324, coupled to the memory 318 through the processor and query engine 318, to access information indicative of the delays occurring in the network **(See page 3 paragraphs 34 and 37 and Figure 3 of Pruthi et al. for reference to a user interface 324 coupled to the memory 318 to provide statistics to a display device, which a provider may use to view the statistics and determine if problems exist)**. Burdick et al. discloses determining the location of a performance problem based on the analysis of network latency conditions **(See column 6 liens 10-26 of Burdick et al. for reference to a system manager 105 using latency data to determine response times and isolate the location of performance problems within a transmission path)**. The combination of Pruthi et al. and Burdick et al. does not disclose determining if a problem that exists in the network is the responsibility of a service provider.

With respect to claim 71, Pruthi et al. discloses a network device, network monitor 102 for use in a network at a demarcation point **(See page 2 paragraphs 31-33 and item 102 in Figure 1 of Pruthi et al. for reference to a network monitor 102 monitoring data communications on the application layer at a point between two networks, N1 and N2, and providing real time metrics or statistics)**. Pruthi et al. also discloses a measurement engine, processor and query engine 316, to take measurements **(See page 3 paragraph 34 and item 316 in Figure 3 of Pruthi et al. for reference to processor and query engine 316 processing data packets to take measurements of statistics)**. Pruthi et al. further discloses generating a measurement value, statistic, in response to information regarding delays **(See page 2 paragraph 33 of Pruthi et al. for reference to statistics including one-way or roundtrip delays)**.

Pruthi et al. also discloses that the delays correspond to a first delay between a first TCP host on a first side and the demarcation point and a second delay between a second TCP host on a second side and the demarcation point **(See page 2 paragraphs 31-33, page 3 paragraphs 38-41 and Figures 1 and of Pruthi et al. for reference to network monitor 102 collecting and analyzing network traffic indicative of both Network N1, which is a first network connected to monitor 102 on a first side of the demarcation point, and Network N2, which is a second network connected to monitor 102 on a second side of the demarcation point and for reference to generating TCP flow statistics, including one-way delay, or latency, statistics, at the monitor)**. Pruthi et al. also discloses a memory 318 coupled to the management engine **(See page 3 paragraph 34 and item 318 in Figure 1 of Pruthi et al. for reference to memory 318 coupled to processor and query engine 316)**. Pruthi et al. further discloses a storing the information indicative of delays, including the measurement value in the memory 318 **(See page 3 paragraph 36 of Pruthi et al. for reference to storing statistics, which include one-way or roundtrip delay statistics, in memory 318)**. Pruthi et al. also discloses management control, user interface 324, coupled to the memory 318 through the processor and query engine 318, to access information indicative of the delays occurring in the network and to determine if a problem exists in the network **(See page 3 paragraphs 34 and 37 and Figure 3 of Pruthi et al. for reference to a user interface 324 coupled to the memory 318 to provide statistics to a display device, which a provider may use to view the statistics and determine if problems exist)**. Pruthi et al. further discloses a service

provider communicatively coupled to the network device, through a host computer via the network, where the provider and management control of the network device communication with each other regarding a problem associated with the operation of the network application **(See page 7 paragraph 82 of Pruthi et al. for reference to a host computer of a service provider coupled to and communicating with an interface computer, which embodies the monitor)**. Burdick et al. discloses determining the location of a performance problem based on the analysis of network latency conditions **(See column 6 liens 10-26 of Burdick et al. for reference to a system manager 105 using latency data to determine response times and isolate the location of performance problems within a transmission path)**. The combination of Pruthi et al. and Burdick et al. does not disclose determining if the problem is the responsibility of an application service provider.

With respect to claims 6 and 45, Pruthi et al. discloses measuring congestion **(See page 2 paragraph 33 of Pruthi et al. for reference to one-way and roundtrip delays which are an indication of congestion of the network application)**. The combination of Pruthi et al. and Burdick et al. does not disclose that the networks where the congestion is monitored are a customer network and a provider network at the demarcation point.

With respect to claims 12, 18, 51, and 57, Pruthi et al. discloses the management control, user interface 324, identifying the problem based on the ratio of the congestion index, one-way delay statistic, on one portion of the network versus the congestion index, one-way delay statistic, on another portion of the network being

different **(See page 5 paragraphs 53-54 of Pruthi et al. for reference to identifying asymmetries in a network based on the one-way delay statistic, meaning the asymmetries are based on differences in the one-way delay statistics on either side of the network monitor)**. The combination of Pruthi et al. and Burdick et al. does not disclose that the two portions of the network are a provider-controlled portion and a customer-controlled portion.

With respect to claims 13, 19, 52, and 58, Pruthi et al. discloses the management control, user interface 324, identifying the problem based on a change in a ratio of the congestion index, one-way delay statistic, on one portion of the network versus the congestion index on another portion of the network being different **(See page 5 paragraphs 53-54 of Pruthi et al. for reference to identifying asymmetries in a network based on the one-way delay statistic over time, meaning the asymmetries are based on changes in one-way delay statistic being different on either side of the network monitor, which means the change in the ratio of the one-way delay statistics on either side of the monitor is also different)**. The combination of Pruthi et al. and Burdick et al. does not disclose that the two portions of the network are a provider-controlled portion and a customer-controlled portion.

With respect to claims 14, 20, 53, and 59, Pruthi et al. discloses the management control, user interface 324, identifying the problem based on a same amount of change occurring in the congestion index values on one portion of the network and another portion of the network **(See page 5 paragraphs 53-54 of Pruthi et al. for reference to identifying asymmetries in a network based on the one-way**

delay statistic, meaning when there is no asymmetry between the changes of the one-way delay statistic on either side of the network monitor, the change in the one-way delay statistic on both sides of the network monitor would be the same). The combination of Pruthi et al. and Burdick et al. does not disclose that the two portions of the network are a provider-controlled portion and a customer-controlled portion.

With respect to claims 28 and 67, Pruthi et al. discloses the measurement engine, processor and query engine 316, monitoring network delays, one-way or roundtrip delays **(See page 2 paragraph 33 of Pruthi et al. for reference for monitoring networks and creating statistics including one-way or roundtrip delays)**. The combination of Pruthi et al. and Burdick et al. does not disclose that the networks that are monitored are both a customer network and a provider network.

With respect to claims 29 and 68, Pruthi et al discloses monitoring the network delays as half round trip delays **(See page 2 paragraph 33 of Pruthi et al. for reference to monitoring networks and creating statistics including one-way delays, which are half round trip delays)**. The combination of Pruthi et al. and Burdick et al. does not disclose that the networks that are monitored are both a customer network and a provider network.

With respect to claims 30 and 69, Pruthi et al. discloses the network device, network monitor 102, monitoring inbound and outbound delays on the networks on both sides of the monitor **(See page 2 paragraph 33 of Pruthi et al. for reference to monitoring networks for statistics including one-way delays)**. Pruthi et al. also

discloses monitoring for host latency, response time, associated with operation of the network application **(See page 2 paragraph 33 of Pruthi et al. for reference to monitoring networks for statistics including response time, which is a measure of host latency)**. Pruthi et al. further discloses combining the results of monitoring to create and indication of the delay associated with using the network application **(See page 5 paragraph 53-54 of Pruthi et al. for reference to using one-way delays to identify asymmetries in the networks on either side of the network monitor, with the asymmetries and response times being an indication of delays associated with using the network application)**. The combination of Pruthi et al. and Burdick et al. does not disclose that the networks that are monitored are both a customer network and a provider network.

With respect to claims 86, 87, and 88, the combination of Pruthi et al. and Burdick et al. does not disclose that the first side is the customer side and the second side is the provider side.

Nelson et al., in the field of communications, discloses a method and apparatus providing a monitor that is located at the point of demarcation between a customer side of a network and a provider side of the network with the monitor using data to determine whether a problem exists in the equipment of the customer or in the equipment of the provides **(See column 6 line 66 to column 7 line 22 of Nelson et al. for reference to a Remote Module monitoring the performance at a point between customer premises equipment and equipment provided by a network provider and for reference to the Remote Module enabling a network service provider to quickly**

and non-intrusively determine whether a problem exists in the equipment provided by the network provider or in the equipment on the customer premises). Monitoring both a customer network and a provider network and determining if a problem is the responsibility of the customer or the provider has the advantage of eliminating false dispatches and expensive and unnecessary troubleshooting required in systems that do cannot specifically determine the location of a network problem **(See column 7 lines 19-22 of Nelson et al. for reference to this advantage).**

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Nelson et al., to combine monitoring both a customer network and a provider network and determining if a problem is the responsibility of the customer or the provider, as suggested by Nelson et al., with the network monitor method and apparatus of Pruthi et al. and Burdick et al., with the motivation being to eliminate false dispatches and expensive and unnecessary troubleshooting required in systems that do cannot specifically determine the location of a network problem.

With respect to claims 7 and 46, Pruthi et al. discloses including identifying a class of traffic being affected **(See page 3 paragraph 37 of Pruthi et al. for reference to determining the types of packets and filtering packets based on their types before processing the packets to gain performance statistics).**

With respect to claim 34, Pruthi et al. discloses mediating, by using data generated at the demarcation point to correct an identified problem in the network, between infrastructure of the network managed by the source provider and customer-

managed infrastructure of the network, networks N1 and N2 which are disclose to be either LANs, WANs, or the Internet **(See page 1 paragraph 3 and page 5 paragraph 53 of Pruthi et al. for reference to the networks used in the monitoring system of Pruthi et al. being either LANs, WANs, or the Internet and for reference to using statistics generated by the network monitor to mediate between the networks by dynamically routing of communications and providing bandwidth management responsive to statistics corresponding to network performance)**.

With respect to claim 35, Pruthi et al. discloses the provider using data generated, metrics, at the demarcation point to indicate to a user a need for an additional resource **(See page 11 paragraph 133 of Pruthi et al. for reference to providers using metrics to notify clients that they need more bandwidth or additional server capacity)**.

With respect to claim 36, Pruthi et al. discloses that the additional resource comprises additional bandwidth **(See page 11 paragraph 133 of Pruthi et al. for reference to providers using metrics to notify clients that they need more bandwidth)**.

With respect to claim 37, Pruthi et al. discloses that the additional resource comprises additional server capacity **(See page 11 paragraph 133 of Pruthi et al. for reference to providers using metrics to identify bad servers and notify the need for additional server capacity and bandwidth)**.

With respect to claim 38, Pruthi et al. discloses the provider using data generated at the demarcation point to identify a service to offer a customer **(See page**

11 paragraph 133 of Pruthi et al. for reference to providers using metrics to notify the customer that they may want to buy more bandwidth).

With respect to claim 40, Pruthi et al. discloses the measurement engine, processor and query engine 316, performing measurements with respect to end-to-end delays **(See page 2 paragraph 33 of Pruthi et al. for reference to statistics, which are taking by the processor and query engine 316, including roundtrip delay).**

With respect to claims 41, 72, 73, and 74, Pruthi et al. discloses the management control, user interface 324, notifying the service provider about the problem and sending an event to address, fix, and alleviate the problem **(See page 10 paragraphs 132-133 of Pruthi et al. for reference to notifying a provider about a problem and sending an event to a network management system for immediate action to fix the problem).**

With respect to claim 43, Pruthi et al. discloses measuring end-to-end performance of the network with respect to the network **(See page 2 paragraph 33 of Pruthi et al. for reference to monitoring the application layer for statistics that include roundtrip delays, meaning the end-to-end network performance is monitored).**

With respect to claim 44, Pruthi et al. discloses measuring quantitative performance of the network application **(See page 2 paragraph 33 of Pruthi et al. for reference to measuring quantitative performance through statistics such as byte counts, bit counts, one-way or roundtrip delays, response times, retransmitted bytes, originating bytes per host, terminating bytes per host, originating-**

terminating host pair counts, web abort rates, throughput, goodput, and percent retransmitted bytes).

With respect to claim 47, Pruthi et al. discloses measuring network availability **(See page 6 paragraph 66 of Pruthi et al. for reference to identifying "troubled servers" which are servers that are negatively impacting network availability).**

With respect to claim 48, Pruthi et al. discloses the performance problem being monitored comprising discarding packets **(See page 2 paragraph 33 of Pruthi et al. for reference to measuring percent retransmitted bytes, where bytes are retransmitted due to bytes being lost or discarded).**

With respect to claim 49, Pruthi et al. discloses the performance problem that is being monitored comprising retransmission that slows overall response time **(See page 2 paragraph 33 of Pruthi et al. for reference to measuring percent retransmitted bytes, which inherently slow overall response time because the bytes have to be sent more than once).**

With respect to claim 50, Pruthi et al. discloses comparing congestion index values over time **(See page 2 paragraphs 31-33 page 5 paragraph 53 of Pruthi et al. for reference to measuring one-way delays as a real-time statistics and using the one-way delay statistics over time for dynamic routing).**

With respect to claims 54 and 60, Pruthi et al. discloses the measurement engine, processor and query engine 316, generating congestion index values, one-way delay statistics, which are a type of measurement value **(See page 2 paragraph 33 of Pruthi et al. for reference to measuring statistics of a network including one-way**

delay statistics). Pruthi et al. also discloses the management control, user interface 324, detecting variances in the congestion index, one-way delay statistic, over time and identifying the problem based on variances in the congestion index, one-way delay statistics **(See page 5 paragraphs 53-54 of Pruthi et al. for reference to identifying asymmetries in a network based on the one-way delay statistic, meaning the asymmetries are based on differences in the one-way delay statistics on either side of the network monitor)**.

With respect to claims 55 and 61, Pruthi et al. discloses the measurement engine, processor and query engine 316, generating congestion index values, one-way delay statistics, which are a type of measurement value **(See page 2 paragraph 33 of Pruthi et al. for reference to measuring statistics of a network including one-way delay statistics)**. Pruthi et al. also discloses the management control, user interface 324, detecting variances in the congestion index, one-way delay statistic, over time between different types of traffic and identifying the problem based on variances in the congestion index, one-way delay statistics **(See page 3 paragraph 37 of Pruthi et al. for reference to determining the types of packets and filtering packets based on their types before processing the packets to gain performance statistics and See page 5 paragraphs 53-54 of Pruthi et al. for reference to identifying asymmetries in a network based on the one-way delay statistic, meaning the asymmetries are based on differences in the one-way delay statistics on either side of the network monitor for different types of traffic)**.

With respect to claim 56, for reference to management control, user interface 324, comparing measurement values, statistics over time **(See page 4 paragraph 50 of Pruthi et al. for reference to comparing statistics over time by recursively collecting and analyzing data be generating statistics based on previously generated statistics)**.

With respect to claim 62, Pruthi et al. discloses the measurement engine, processor and query engine 316, characterizing performance of the network application using one or more metrics **(See page 2 paragraph 33 of Pruthi et al. for reference to using generating statistics to monitor application layer traffic)**.

With respect to claim 63, Pruthi et al. discloses the metrics comprising a delay metric, roundtrip delay statistic, characterizing delay associated with end-to-end traffic in the network **(See page 2 paragraph 33 of Pruthi et al. for reference to statistics including a roundtrip delay statistic)**.

With respect to claims 64, Pruthi et al. discloses the metrics comprising a server delay metric, response time statistic, characterizing delay of a server in responding to a request associated with the network application **(See page 2 paragraph 33 of Pruthi et al. for reference to the response time statistic)**.

With respect to claim 65, Pruthi et al. discloses the metrics, statistics, comprising packet counts and data rates **(See page 9 paragraph 103 of Pruthi et al. for reference to statistics including byte/packet counts and bit/packet rates)**.

With respect to claims 70 and 77, Pruthi et al. discloses a classification engine, which is part of the processor and query engine 316, to classify traffic in a traffic flow on

the network **(See page 3 paragraph 37 of Pruthi et al. for reference to filtering packets based on the type of each packet)**. Pruthi et al. also discloses a response time block, which is part of the processor and query engine 316, to monitor response time **(See page 2 paragraph 33 of Pruthi et al. for reference to processor and query engine 316 creating statistics including a response time statistic)**. Pruthi et al. further discloses a shaping block, which is a part of the processor and query engine 316 to shape traffic **(See page 5 paragraph 53 of Pruthi et al. for reference to using statistics to shape traffic by dynamically routing communications)**. Pruthi et al. also discloses the measurement engine, processor and query engine 316, communicatively coupled to the classification engine, the response time engine, and the shaping block to obtain information to create measurements. These blocks are inherently coupled in the apparatus of Pruthi et al. because they are all embodied in the same processor and query engine 316.

With respect to claims 75 and 76, Pruthi et al. discloses shaping traffic in response to the event by controlling non-essential traffic **(See page 3 paragraph 37 of Pruthi et al. for reference to dynamically shaping traffic in response to the statistics by adjusting network routing, which inherently means controlling all traffic including non-essential traffic)**.

With respect to claim 79, Pruthi et al. discloses the service provider allocating additional bandwidth in response to the notification of the problem **(See page 5 paragraph 53 of Pruthi et al. for reference to dynamically changing bandwidth,**

which includes allocating additional bandwidth, based on the statistics generated by the network monitor).

With respect to claims 83 and 84, Pruthi discloses the network architecture further comprising a customer data center coupled to a network device via a local area network **(See page 1 paragraph 3 page 2 paragraph 32 and Figure 1 of Pruthi et al. for reference to a computer C1, which is a customer data center, coupled to a network device via an Ethernet network N1 and for reference to the networks monitored in this system being LANs).**

5. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pruthi et al. in view Burdick et al. as applied to claims 1-5, 8-11, 15-17, 21-26, and 85 above, and in further view of Drysdale et al. (U.S. Pat. 6058102).

With respect to claim 27, the combination of Pruthi et al. and Burdick et al. does not disclose the one or more metrics comprising frame relay counts.

Drysdale et al., in the field of communications, discloses a frame relay count in a system for performing service level analysis **(See column 11 lines 47-67 of Drysdale et al. for reference to counting frames relays for using in determining data delivery ratios)**. Providing a frame relay count has the advantage of allowing a more detailed set of statistics to be generated by a network monitor.

It would have been obvious to one of ordinary skill in the art at the time of the invention, when presented with the work of Drysdale et al., to combine providing a frame relay count, as suggested by Drysdale et al., with the network monitor method

and apparatus of Pruthi et al. and Burdick et al., with the motivation being to allow a more detailed set of statistics to be generated by a network monitor.

6. Claim 66 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pruthi et al. in view of Burdick et al. and Nelson et al. as applied to claims 6-7, 12-14, 18-20, 28-30, 33-41, 43-65, 67-77, 79, 83-84, and 86-88 above, and further in view of Drysdale et al.

With respect to claim 66, the combination of Pruthi et al., Burdick et al., and Nelson et al. does not disclose the one or more metrics comprising frame relay counts.

Drysdale et al., in the field of communications, discloses a frame relay count in a system for performing service level analysis **(See column 11 lines 47-67 of Drysdale et al. for reference to counting frames relays for using in determining data delivery ratios)**. Providing a frame relay count has the advantage of allowing a more detailed set of statistics to be generated by a network monitor.

It would have been obvious to one of ordinary skill in the art at the time of the invention, when presented with the work of Drysdale et al., to combine providing a frame relay count, as suggested by Drysdale et al., with the network monitor method and apparatus of Pruthi et al., Burdick et al., and Nelson et al., with the motivation being to allow a more detailed set of statistics to be generated by a network monitor

7. Claims 31, 32, and 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pruthi et al. in view of Burdick et al. and Nelson et al. as applied to

claims 6-7, 12-14, 18-20, 28-30, 33-41, 43-65, 67-77, 79, 83-84, and 86-88 above, and further in view of Bowman-Amuah (U.S. Pat. 6556659).

With respect to claim 31, Pruthi et al. discloses providing a demarcation point with respect to a network application provided by a provider in a network **(See page 2 paragraphs 31-33 and item 102 in Figure 1 of Pruthi et al. for reference to providing a demarcation point with respect to a network application, between networks N1 and N2)**. Pruthi et al. also discloses generating, at the demarcation point data indicative of a first network latency condition between a first TCP host on a first side and the demarcation point and a second network latency condition between a second TCP host on a second side and the demarcation point **(See page 2 paragraphs 31-33, page 3 paragraphs 38-41 and Figures 1 and of Pruthi et al. for reference to network monitor 102 collecting and analyzing network traffic indicative of both Network N1, which is a first network connected to monitor 102 on a first side of the demarcation point, and Network N2, which is a second network connected to monitor 102 on a second side of the demarcation point and for reference to generating TCP flow statistics, including one-way delay, or latency, statistics, at the monitor)**. The combination of Pruthi et al., Burdick et al., and Nelson et al. does not disclose employing at least one service-level agreement between the provider of the network application and a customer with a responsibility for management of performance problems associated with the network application based on the demarcation point.

With respect to claims 32 and 78, the combination of Pruthi et al., Burdick et al., and Nelson et al. does not disclose monitoring compliance with the service-level agreement, sending an event to the network device for notification of a problem, and sending a notification if the service-level agreement is being violated.

Bowman-Amuah, in the field of communications, discloses monitoring compliance with the service-level agreement, sending an event to the network device for notification of a problem, and sending a notification if the service-level agreement is being violated **(See column 23 lines 6-35 of Bowman-Amuah for reference to monitoring whether service levels are being met and sending an event to alert the customer when the service levels are being violated)**. Monitoring for and alerting customers about service level agreement compliance has the advantage of allowing a customer to make sure that they are receiving all the services they are paying for.

It would have been obvious to one of ordinary skill in the art at the time of the invention, when presented with the work of Bowman-Amuah, to combine monitoring and alerting customers about service level agreement compliance, as suggested by Bowman-Amuah, with the network monitoring method and apparatus of Pruthi et al., Burdick et al., and Nelson et al., with the motivation being to allow a customer to make sure that they are receiving all the services they are paying for.

8. Claims 42 and 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pruthi et al. in view of Burdick et al. and Nelson et al. as applied to claims 6-7, 12-

14, 18-20, 28-30, 33-41, 43-65, 67-77, 79, 83-84, and 86-88 above, and further in view of Fletcher et al. (U.S. Pat. 6321264).

With respect to claims 42 and 80, the combination of Pruthi et al., Burdick et al., and Nelson et al. does not disclose recording times associated with encountering packets and acknowledgment of the packets to generate a measurement value.

Fletcher et al., in the filed of communications, discloses recording times associated with encountering packets and acknowledgment of the packets to generate a measurement value **(See the abstract and claim 5 of Fletcher et al. for reference to recording time when a packet is first sent, recording times of a second packet that is an acknowledgment of the first packet, and using the times to generate a performance statistic, which is a measurement value)**. Recording the times of a packet and a corresponding acknowledgment packet has the advantage of providing measurements, which may be used to determine the time it takes a packet traverse the network and then be acknowledged.

It would have been obvious to one of ordinary skill in the art at the time of the invention, when presented with the work of Fletcher et al., to combine recording the times of a packet and a corresponding acknowledgment packet, as suggested by Fletcher et al., with the network monitoring method and apparatus of Pruthi et al., Burdick et al., and Nelson et al., with the motivation being to provide measurements, which may be used to determine the time it takes a packet traverse the network and then be acknowledged.

9. Claims 81 and 82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pruthi et al. in view of Burdick et al. and Nelson et al. as applied to claims 6-7, 12-14, 18-20, 28-30, 33-41, 43-65, 67-77, 79, 83-84, and 86-88 above, and further in view of Brailean et al. (U.S. Pat. 6134237).

With respect to claims 81 and 82, the combination of Pruthi et al., Burdick et al., and Nelson et al. does not disclose recording the sequence number of each of the packets at the demarcation point. Pruthi et al. does disclose recording a time each of the packets reaches the demarcation point **(See pages 5-6 paragraphs 61-62 for reference to recording the current time that a packet is received at the network monitor for use in computing delay values)**.

Brailean et al., in the field of communications, discloses recording the sequence number of each of the packets at the demarcation point **(See column 6 lines 33-51 of Brailean et al. for reference to recording the sequence number of a packet at a network monitor, and using this number to determine if a communication error has occurred)**. Recording the sequence number of a packet has the advantage of allowing a network monitor to check for communications errors by matching recorded sequence numbers of packets to sequence numbers in received acknowledgment packets **(See column 6 lines 33-51 of Brailean et al. for reference to this process)**.

It would have been obvious to one of ordinary skill in the art at the time of the invention, when presented with the work of Brailean et al., to combine recording packet sequence numbers, as suggested by Brailean et al., with the network monitoring method and apparatus of Pruthi et al., Burdick et al., and Nelson et al., with the

motivation being to allow a network monitor to check for communications errors by matching recorded sequence numbers of packets to sequence numbers in received acknowledgment packets.

Response to Arguments

10. Applicant's arguments with respect to claims 1-88 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason E. Mattis whose telephone number is (571) 272-3154. The examiner can normally be reached on M-F 8AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jem

HUY D. VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600